

OUTLINE SHEET 4-3-1

Quality Assurance

A. Introduction

A series of catastrophic incidents prompted the Navy to re-evaluate its maintenance practices. The result is a program that ensures that all maintenance are performed in accordance with technical specifications. This lesson will detail the Navy's Quality Assurance Program.

B. Enabling Objectives

- 4.7 **DESCRIBE** the purpose of the quality assurance program.
- 4.8 **STATE** the major components of the quality assurance program.
- 4.9 **STATE** the levels of essentially.
- 4.10 **DESCRIBE** the duties of the ship quality control inspector

C. Topic Outline

- 1. Introduction
- 2. Overview
- 3. Administrative Procedures
- 4. Technical Procedures
- 5. Summary and Review
- 6. Assignment

ASSIGNMENT SHEET 4-3-2
Quality Assurance

A. Introduction

This material is to be completed prior to the material being covered in class.

B. Enabling Objectives

Refer to enabling objectives in Outline Sheet 4-3-1.

C. Study Assignment

1. Read Information Sheet 4-3-3

D. Study Questions

1. What is the difference between a Controlled Work Package and a Formal Work Procedure?
2. What are the levels of essentiality on non-nuclear systems?

INFORMATION SHEET 4-3-3

Quality Assurance

A. Introduction

This information describes the Quality Assurance Program.

B. Reference

Fireman NAVEDTRA 12001
QA Manual

C. Information

- I. The Quality Assurance (QA) Program was developed to ensure maintenance is performed in accordance with technical specifications.
- II. In the Navy, the technical rule for all maintenance is that **technical specifications must be met at all times.**
 - A. Specifications are the standards to which components are purchased, installed, tested, and maintained.
 - B. They include but are not limited to:
 1. type of material
 2. dimensional clearances
 3. electrical values
 4. vibration levels
 5. physical arrangements
 - C. Specifications are the requirements, not the objective for acceptability for any maintenance action.
 - D. Conformance applies to all ships, whether nuclear or non-nuclear, surface ship or submarine.
 - E. If for some reasons specifications cannot be met, a request called the Departure from Specifications (DFS) must first be approved by appropriate authority before a substitute material or process can be used.
- III. The Quality Assurance (QA) Program does not recognize degrees of success.
 - A. QA is either pass or fail.
 - B. The result of maintenance either meets specifications or it does not.
- IV. The key elements of the program include administrative and technical procedures.
- V. Administrative procedures include:
 - A. Formal training and qualification
 1. All hands shall receive QA awareness training during initial indoctrination and annually thereafter.

2. All QA Program personnel, from the craftsmen to the Quality Assurance Officer (QAO) must qualify through the PQS program.
 - B. Audit and surveillance
 1. These are used to determine if the ship is complying with QA Program directives.
 2. Audits may be internal, conducted by ships force personnel assigned by the QAO, or external, conducted by the Immediate Superior In Command (ISIC).
 - C. QA forms and records - These documents are used as evidence that repairs and alterations were accomplished according to specifications.
 - D. Departure from Specifications (DFS) control
 1. All ships are designed and constructed to specific technical and physical requirements.
 2. Every effort will be made to maintain all ship's systems and components to their designed specifications.
 3. There are, however, those situations in which applicable specifications cannot be met.
 4. To maintain precise control of the ship's configuration, all DFSs must be recorded and approved by appropriate authority.
 - E. Controlled Work Packages (CWP) / Formal Work Procedures (FWP).
 1. Formal Work Procedures are accurate and clear step-by-step procedures that guide the worker on how to accomplish the task.
 2. Formal Work Procedures are required in certain maintenance tasks because of:
 - a) personnel and equipment safety
 - b) system operating restrictions
 - c) cost impact resulting from improperly performed work.
 3. A Formal Work Procedure is used to accomplish a specific task. Pre-existing procedures from documents such as Maintenance Requirements Cards (MRCs) and NAVSEA Technical Manuals may be used as part of the FWP package.
 4. A Controlled Work Package is a Formal Work Package with all the appropriate QA forms attached.
 - a) These forms serve as the Objective Quality Evidence (OQE) of the work.
 - b) OQEs are documents proving the quality of certain materials used, the proper assembly of the component, and the satisfactory testing of the component or system.
 - c) A Controlled Work Package is used only when Objective Quality Evidence is required.
- VI. Technical procedures include:

- A. Material control requirements - Materials used must be identified, verified, and regulated throughout the installation or repair process. It is used to ensure that the end product meets the specifications required.
- B. Fabrication and repair - The actual performance of the task must be accomplished only by fully qualified individuals, using only approved procedures and materials.
- C. Testing / Recertification
 - 1. Testing is the method used to certify/re-certify the work that was accomplished.
 - 2. It ensures that the system or component has been returned to its normal operational state and will function as designed.
- D. Objective Quality Evidence (OQE) are used to document the critical attributes of the maintenance.
 - 1. It must be completed during the work process.
 - 2. The time spent to complete these documents will be negligible when compared to the time spent to correct suspected improper work resulting from insufficient or improper documentation.
- E. Critical Quality Control Points or Q-Points are steps that are critical to the first-time quality of the product.
 - 1. Q-Points are steps in the work process that require high level of skills, proficiency, strong knowledge, working within narrow tolerances, and/or close supervision due to difficult environmental conditions.
 - 2. Inspections critical to the successful completion of the task must be accomplished by a separate individual other than the craftsmen doing the work. This individual must be qualified as a Quality Assurance Inspector (QAI).
 - 3. Quality Assurance Inspectors are responsible to their respective Division Officers and to the Quality Assurance Officer for coordinating and administering the QA Program within their respective workcenters.
- VII. Not all materials or repair parts used in a process require the same level of control. In order to determine the level of control required for the parts, the level of essentiality for the system or component must first be determined.
 - A. The levels of essentiality for non-nuclear systems are:
 - 1. SUBSAFE - acronym for Submarine Safety. Materials used in this system category provide a high level of confidence in the integrity of hull boundaries and in the ability of submarines to recover from flooding and control surface casualties.
 - 2. LEVEL I - materials used in this system category provide a high degree of assurance that their chemical composition and mechanical properties meet specified requirements.
 - B. Systems or components that are designated as LEVEL I can be

found in the LEVEL I Boundary Book. Examples of LEVEL I systems are:

1. Main Steam systems with designed temperatures above 775°F.
2. Gaseous oxygen systems above 100 psig.
3. Liquid oxygen and liquid nitrogen (O₂N₂) piping.

C. It is important to know that although a system may be LEVEL I, it does not mean that every part or material in that system has to be LEVEL I.

1. The Joint Fleet Maintenance Manual Vol.V (QA Manual) specifies those parts of LEVEL I systems that are LEVEL I materials.
2. Once the part or material has been determined to be SUBSAFE or LEVEL I, they are required to be handled with the highest level of control. These requirements include:
 - a) Upon receipt, the material must be inspected to establish positively that it is the correct material for the job.
 - b) Material identification must remain on or with the material throughout all stages of stowage, fabrication, and installation.
 - c) The material must be "traceable" to the records or data that prove the material conforms to specified requirements.
 - d) Any material that loses its "identity" is considered unsuitable and must be rejected and segregated from other controlled materials.
 - e) Due to higher costs and stringent handling requirements, controlled materials must be used only when required.